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Small, intricate, and beautiful; a new species of lophioneurid from the Cretaceous (Insecta: Thripida: †Lophioneurida)

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Keywords :

Insecta; Thripida; Lophioneurida; *Retiptera*; *Burmacypha*; *Iotacypha*; thrips; taxonomy; description; new genus; new species; Burmite; Burma; Cretaceous; Myanmar; extinct; amber.

Abstract. – Following a recent publication describing a new species of lophioneurid within a new subfamily (Iotacyphinae), several collections were reviewed in the search for additional material. Within the collections several Iotacyphinae specimens were located, some representing a recently described species, *Iotacypha zherikhini* Shcherbakov et al., 2024, while several others represent a unique undescribed species. The new species has significantly distinct forewing venation and therefore is named within a new genus as well: *Retiptera brennae* **gen**. et **sp**. **nov**. This brings the total number of Iotacyphinae species to three, all are exclusively known from Cretaceous Burmese amber (~98.79 ± 0.62 million years old). This new genus is similar to the other Iotacyphinae species, *Burmacypha longicornis* Zherikhin, 2000 and *Iotacypha zherikhini* Shcherbakov et al., 2024, as all three genera have sclerotized forewing cells and a large central forewing cell formed by the fusion of MP with CuA. To allow easy differentiation for these three species, a key to presently described Iotacyphinae species is included.

Cumming R. T., Engel M. S., Lian Z. & Ulitzka M. R., 2024. – Small, intricate, and beautiful; a new species of lophioneurid from the Cretaceous (Insecta: Thripida: †Lophioneurida). *Faunitaxys*, 12(58): 1 – 10.

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Introduction

†Lophioneurida is an extinct clade of Thripida Fallén, 1814, dating from the Carboniferous (~358.9 – 298.9 Ma) to the Cretaceous (~145.0 – 66.0 Ma). The †Lophioneurida were likely cosmopolitan as evident from their fossil record which includes specimens from many modern day countries: Australia, USA, Russia, China, Kazakhstan, Germany, Myanmar, Lebanon, and France. †Lophioneurida is suspected to be paraphyletic, with modern thrips appearing to have evolved from members of this clade (Wang et al., 2009). With many unique species/clades being described in recent years (Nel et al., 2007, Nel et al., 2014; Ulitzka, 2021) the morphological diversity of this clade requires further investigation and reinterpretation.

Materials and methods

The amber containing the specimens discussed herein is from the well-known Hukawng Valley in northern Myanmar, a prolific site of amber excavation (Grimaldi et al., 2002). The age of this amber deposit is estimated to be ~98.79 ± 0.62 million years old, within the Cenomanian stage of the Cretaceous (Shi et al., 2012).

One specimen of *Iotacypha zherikhini* Shcherbakov, Bashkuev & Shmakov, 2024 and the paratype specimen of *Retiptera brennae* **gen**. et **sp**. **nov**. were donated from Patrick Müller, Käshofen, Germany to the last author (MRU) and are now part of the “Collection Ulitzka”. *Iotacypha zherikhini* is collection number MU-Fos-151/1 (Fig. 1). The paratype *Retiptera brennae* **gen**. et **sp**. **nov**. is collection number MU-Fos-153/1. This collection is intended to be donated to the Senckenberg Museum, Frankfurt, Germany. The fossils have been prepared according to Ulitzka (2015). To increase visibility during microscopic examination, the specimens were ground thinner than outlined in this earlier description. Rough abrading was carried out using a water-fed flat lap; the fine works, however, were done by hand with wet grindstones (grit 3,000, 5,000 and 10,000). Afterwards, the amber was polished with whiting (calcium carbonate powder) on a slightly moistened cotton cloth and finally embedded in XOR-Polyester-Resin (S-Kresin 2410, manufacturer: S u. K Hock GmbH, Regen, Germany) to prevent decomposition and oxidation of the amber. The specimens were examined and measured using a Zeiss Stemi SV-11 Apo

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stereomicroscope and a Zeiss standard microscope with the following objectives: Zeiss Neofluar 6.3/0.20 160/-, Zeiss Plan 10/0.22 160/-, Zeiss Plan 16/0.35 Ph2 160/0.17, Nikon M Plan 20 0.4 ELWD 210/0 and Nikon M Plan 40 0.5 ELWD 210/0. Illumination involved merging transmission light with two or three white-light-LED incident illuminators. White paper was used as a diffuser for incident illumination to prevent reflections in the amber; blue coloured paper was inserted under the sample with transmission light to achieve better contrast between the inclusion and the yellowish amber. Images were taken with a digital camera (Canon EOS 70d) attached to the microscope, and these were produced using Helicon Focus software. Adobe Photoshop (version 25.0.0) and Topaz AI were used for final color adjustment and sharpening.

An additional specimen of *Iotacypha zherikhini* is from the first author's (RTC) collection and dates from ca. 2010 (Fig. 2). The specimen was morphologically reviewed using a 2x–225x trinocular boom stand stereo microscope (#ZM-4TW3-FOR-20MBI3) and photographs were taken with the attached high-speed 20MP camera (#MU2003-BI-CK) (AmScope, Irvine, USA). Illumination was from a 6-Watt LED dual gooseneck illuminator lit by an #85-265VAC/50-60Hz lighting unit (AmScope, Irvine, USA). Measurements were taken using AmLite digital camera software for Mac OS X 10.8 64-bit which was calibrated with a microscope stage calibration slide (#MR095), 0.01mm div. (AmScope, Irvine, USA). Adobe Photoshop Elements 13 (Adobe Inc., San Jose, USA) was used as post-processing software.

The holotype specimen of *Retiptera brennae* **gen**. et **sp**. **nov**. was purchased by the third author (ZL) from Myanmar as raw ore in accordance with national customs declaration procedures. The specimen is currently housed in the private collection of the third author (ZL) (Tainan, Taiwan) and is available to researchers upon reasonable request. The specimen will eventually be transferred to the new gallery of the private museum (Asian Amber Biological Museum: Tainan, Taiwan) which is currently being developed (anticipated opening in 2027), upon opening the holotype will be publicly available. Once the new museum gallery is completed the holotype will be available for visiting researchers. The specimen was cut from a piece of raw amber ore, initially shaped with a polishing wheel and roughly ground with a water-fed flat mill; the finer work was done by hand with a wet grinding stone (grits 800.1200. 3000, 5000). Incident and transmitted light photographs were taken with a Nikon SMZ1270 stereo microscope (Tokyo, Japan) with attached Nikon 1xWF WD:70 200x and 800x lens and 4k resolution, Spotlight O13A DC 12v (Luzon, Philippines) and yellow-white reflector under the microscope for illumination. Measurements were taken with xyz-axis level attached to the stereo microscope. The images were stacked with the Nikon application Capture V2.2 (New York City, USA). The images were edited in Adobe Photoshop CC 13.0.1 (San Jose, USA) to enhance contrast.

Illustrations were done by scientific illustrator Liz Sisk (Washington D.C., USA) using photographs of the types.

Morphological abbreviations used herein

Sc subcosta
R radius
RA radius anterior
Rs1 radial sector 1
Rs2 radial sector 2
R+M fused radius and media
Rs+M fused radial sector and media
M media
MA media anterior
MP media posterior
R+M+Cu fused radius, media, and cubitus
Cu cubitus
CuA cubitus anterior
CuP cubitus posterior
MP+CuA fused media posterior and cubitus anterior
1A first anal

Results

Systematic Palaeontology

Superorder **Thripida** Fallén, 1814
(Reformation of Thripsides Fallén (1814) by Rohdendorf (1977))

Order †**Lophioneurida** Tillyard, 1921

Subfamily **Iotacyphinae** Shcherbakov, Bashkuev & Shmakov, 2024

Iotacypha zherikhini Shcherbakov, Bashkuev & Shmakov, 2024
(Fig. 1 & 2)

Type locality. – Hukawng Valley, Kachin State, Myanmar.

Horizon and age. – Upper Cretaceous ~98.79 ± 0.62 million years old (Shi et al., 2012).

Discussion. – This species was recently described and taxonomically associated with *Burmacypha longicornis* to form the subfamily Iotacyphinae Shcherbakov et al., 2024. This clade can easily be identified by several morphological features. First, the forewings have intricate, small tessellating hexagonal patterns. Additionally, the forewings have an apical fusion of MP with CuA. This unique character creates an enclosed, large central cell on the forewings, a feature not known from any other †Lophioneurida.

Currently the genus is monotypic. See the generic differentiation below for differentiation from the other two genera presently known in the clade; *Burmacypha longicornis* and *Retiptera brennae* **gen**. et **sp**. **nov**. Additional specimens of *Iotacypha zherikhini* reviewed herein (Fig. 1, 2) are very similar to the type material from the original description. Due to the taphonomy of these additional specimens, no additional morphological details can be added to the species description.

Retiptera **gen**. **nov**.

ZooBank : https://zoobank.org/32C2B007-9E95-4535-993D-A908EEBBF359

Type species. – *Retiptera brennae* **gen**. et **sp**. **nov**. herein designated.

Etymology. – *Retiptera* = “net wing”. Formed from “reti-” = Latin for “net” + -ptera “wing” [singular feminine] new Latin, from Ancient Greek (πτερόν = pterón, “wing”). The gender of the new genus is feminine following the root “-ptera”.

Type locality. – Hukawng Valley, Kachin State, Myanmar.

Horizon and age. – Upper Cretaceous ~98.79 ± 0.62 million years old (Shi et al., 2012).

Differentiation. – There are two other genera known from the clade, *Burmacypha* Zherikhin, 2000, and *Iotacypha* Shcherbakov et al., 2024 both of which are superficially similar due to the forewings with intricate, tessellating hexagonal patterns and an apical fusion of MP with CuA which creates an enclosed, large central cell (although the shape of this enclosed cell allows differentiation).

Retiptera **gen**. **nov**. can be differentiated from *Burmacypha* by multiple venation differences in both the forewing and the hindwing, as well as by notably differing antenna morphology. In *Burmacypha* the Sc is short, only running ca. ¼ the way through the wing length and it hugs the costal margin (Fig. 3A) versus in *Retiptera* **gen**. **nov**. the Sc is long (ca. ½ of the forewing length; Fig. 3C) and the Sc has a significant gap between it and the wing margin, with the central ⅓ of the Sc running parallel with the margin, giving the cell a trapezoidal appearance (Fig. 3C). Additionally in the forewing, *Burmacypha* has a significantly differing set of radial veins; the RA splits near the proximal third of the wing and is angled

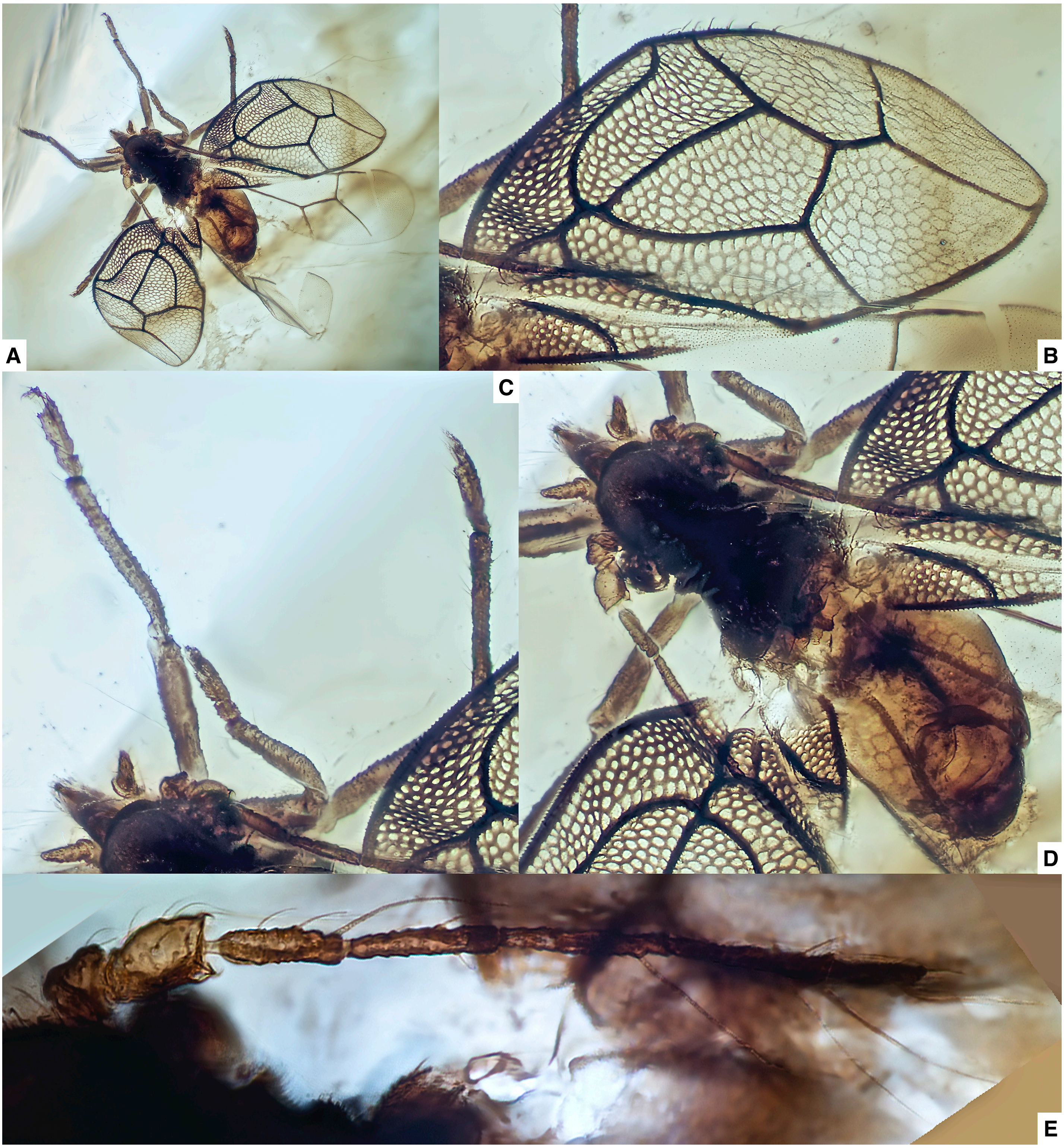

Fig. **1**. Additional *Iotacypha zherikhini* specimen. **A**. Dorsal habitus. **B**. Details of right forewing showing texture and spines. **C**. Details of right three legs. **D**. Details of head, antennae, thorax, and abdomen. **E**. Details of antenna, dorsal.

anteriorly and it has a bifurcate Rs with the Rs1 forming near the middle of the wing length and the Rs2 near the wing apex (Fig. 3A), versus *Retiptera* **gen**. **nov**. which has the radial veins only forming the RA ca. ⅗ of the way through the wing length and a singular radial sector (Rs1) splitting near the posterior ⅓ of the wing length and terminating on the apex (Fig. 3C). An additional feature in the forewings for differentiation is the presence/absence of a first anal vein (1A) as *Burmacypha* lacks the vein while *Retiptera* **gen**. **nov**. has the first anal prominent (as thick as the other forewing veins) and running ca. ⅖ of the way through the wing length (Fig. 3C). The central cell of the forewings formed by the fusing of MP+CuA also differentiates these species as *Burmacypha* has this cell formed by seven straight sides and forms roughly an oval (Fig. 3A) versus *Retiptera* **gen**. **nov**. which also has seven sides, but the R+M fused vein is distinctly curved, giving the central cell an overall reniform shape (Fig. 3C). Within the hindwings the genera can be separated by the presence or absence of the cubitus as *Burmacypha* has the vein prominently present (Fig. 3A) and *Retiptera* **gen**. **nov**. lacks a cubitus (Fig. 3C). Additionally, the hindwings are of drastically differing sizes, with *Burmacypha* having a well-developed hindwing only slightly smaller than the forewing (Fig. 3A) versus *Retiptera* **gen**. **nov**. which has a highly reduced hindwing notably shorter and thinner than the forewing (Fig. 3C). The antennae of the *Retiptera* **gen**. **nov**. differ as *Burmacypha* has seven-segmented antennae, with the scape and pedicel thick and distinctly longer than broad with the flagellomeres significantly thinner than the scape and pedicel and the individual flagellomeres long and filiform versus *Retiptera* **gen**. **nov**. which has eight-segmented antennae where the scape and pedicel are short and stout and the flagellomeres are long and only slightly thinner than the pedicellus, not filiform (Fig. 4B).

Retiptera **gen**. **nov**. can be differentiated from *Iotacypha* by multiple venation differences in both the forewing and the hindwing, as well as by notably differing antenna morphology. In both genera the forewing Sc is long (~½ the wing length) but in *Retiptera* **gen**. **nov**. the Sc has a significant gap between it and the wing margin, with the central ⅓ of the Sc running parallel with the relatively straight margin, giving the cell a trapezoidal appearance (Fig. 3C) versus in *Iotacypha* the Sc is widest in the proximal ¼ before the Sc reaches toward the wing margin and then runs parallel with the arcing margin until it terminates near the middle of the forewing length (giving the cell a long, thinner curved appearance; Fig. 3B). Additionally in the forewing the genera have significantly different sets of radial/medial veins; in *Iotacypha* there is a fused Rs1+MA vein emerging from the large central cell which then bifurcates into the Rs1 and MA which run diverging to the wing apical margins (Fig. 3B) versus in *Retiptera* **gen**. **nov**. the Rs1 and MA emerge independently from the large central cell and run straight to the forewing margins (Fig. 3C). An additional feature in the forewings is the first anal vein (1A) as *Retiptera* **gen**. **nov**. has 1A running parallel with the forewing margin for ca. ⅓ of the wing length and CuP terminates on the 1A ca. ½ way through 1A's length (Fig. 3C) while *Iotacypha* has the first anal only running for ca. ⅙ of the way through the wing length, arcing towards the margin (not running parallel), and the CuP does not terminate on the 1A, instead reaching past it to the wing margin (Fig. 3B). Also in the forewing, the large central cell in *Retiptera* **gen**. **nov**. is seven sided and approximately reniform in shape (Fig. 3C) versus *Iotacypha* which has a four sided cell where the two proximal most veins are long and arcing, giving the central cell somewhat of an arrowhead shape (Fig. 3B). Forewing sclerotization also differs between the two genera, as *Retiptera* **gen**. **nov**. has a pattern appearing as a regular hexagon tessellation with most cells hexagonal in shape and the sclerotization between the cells is thin and angular,

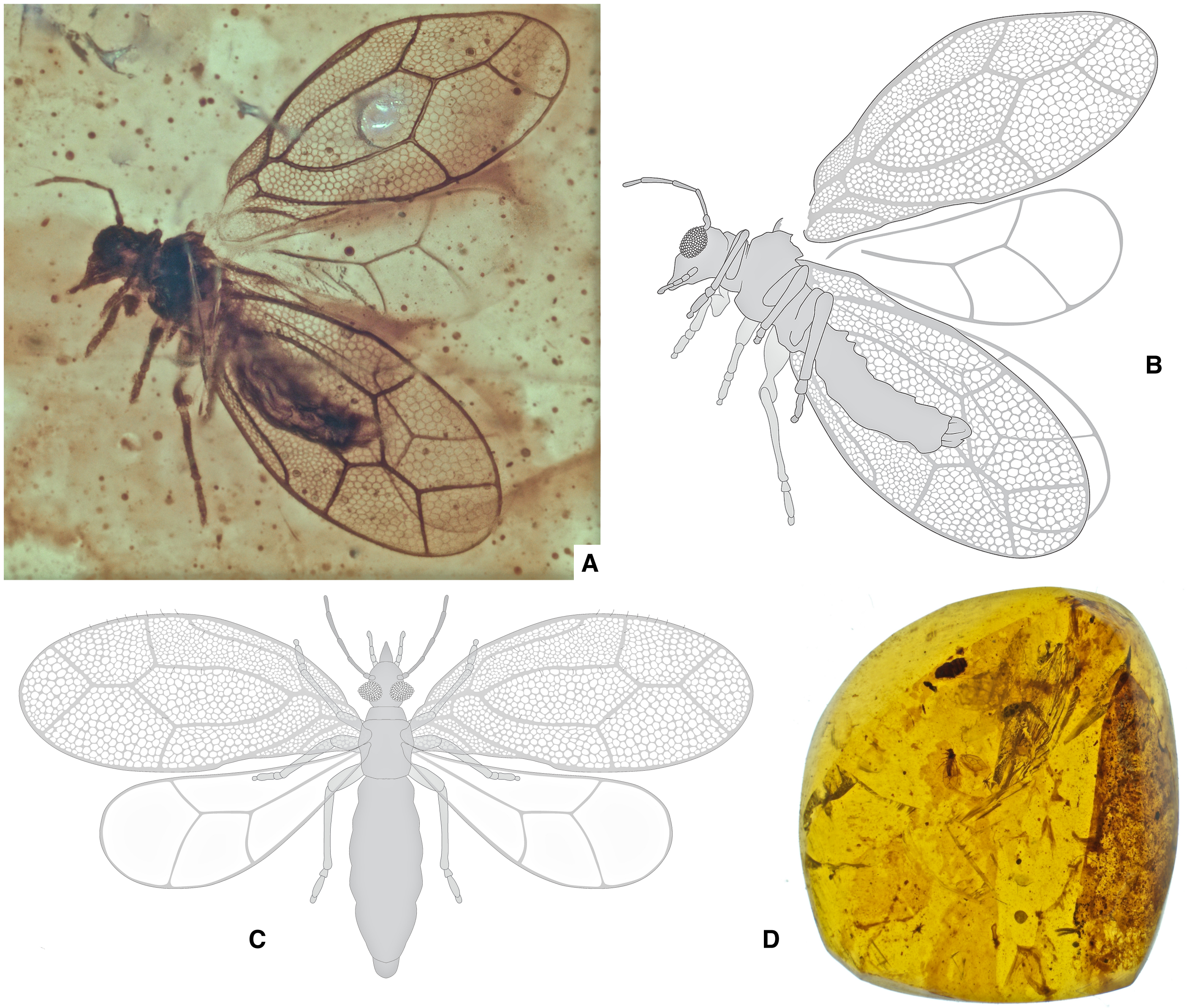

Fig. **2**. Additional *Iotacypha zherikhini* specimen. **B**, **C**. Illustrated by Liz Sisk (USA). **A**. Lateral habitus. **B**. Lateral habitus line drawing. **C**. Reconstruction line drawing. **D**. Piece of amber with the inclusion near the center.

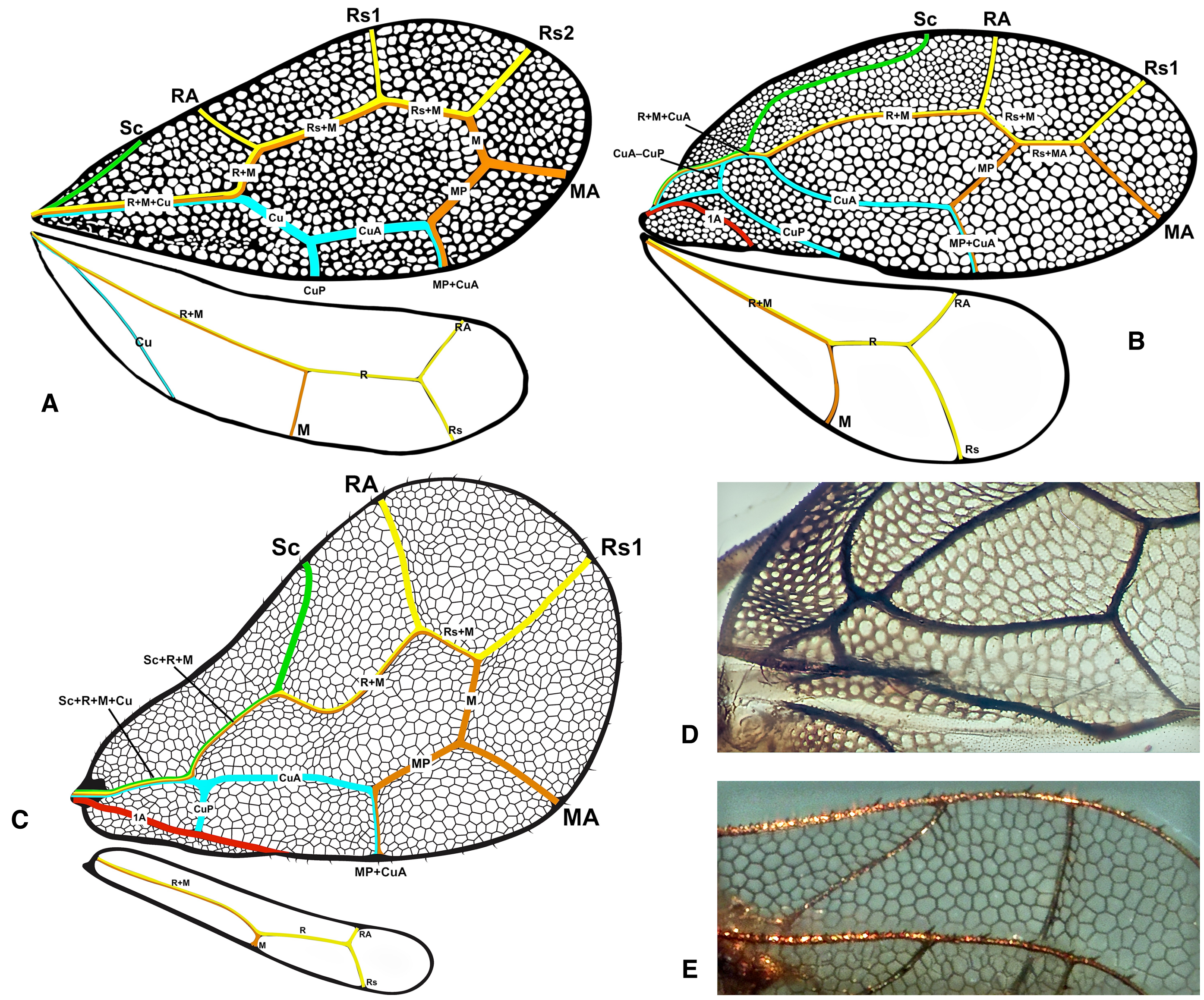

Fig. **3**. †Iotacyphinae wing venation interpretations for known genera. **A**. *Burmacypha longicornis* following Zherikhin (2000) with some renaming of veins from the original description. **B**. *Iotacypha zherikhini*. **C**. *Retiptera brennae* **gen**. et **sp**. **nov**. **D**. Details of forewing cell sclerotization of *Iotacypha zherikhini*. **E**. Details of forewing cell sclerotization of *Retiptera brennae* **gen**. et **sp**. **nov**.; R1=RA; Rs1=R2+3, Rs2=R4+5.

giving the membrane a honeycomb appearance (Fig. 3E) versus *Iotacypha* which has a pattern more akin to a rounded semi-regular tessellation pattern where the cells are circular and the sclerotization is thick, making it appear more like the cells are punch marks in the membrane (Fig. 3D). The size of the hindwings differentiates the genera as *Retiptera* **gen**. **nov**. has a highly reduced hindwing, many times longer than wide, giving it a long thin appearance (Fig. 3C) versus the *Iotacypha* hindwing which is well-developed, only slightly shorter and narrower than the forewing (Fig. 3B). The antennae of the two genera differ significantly as *Retiptera* **gen**. **nov**. has eight-segmented antennae, with the scape and pedicel thick and stout with the flagellomeres slightly thinner than the pedicel and the individual flagellomeres long (three to four times the length of the pedicel; Fig. 4B) versus *Iotacypha* which has seven-segmented antennae where the scape, pedicel, and the flagellomeres are short and stout, with the flagellomeres ca. half the width of the pedicellus and only slightly longer (Fig. 1E). Additionally, the flagellomeres of *Iotacypha* have several long and thick setae on each flagellomere, some longer than the flagellomere's length (Fig. 1E) versus *Retiptera* **gen**. **nov**. flagellomeres which lack long setae, instead at most with only short pubescence that is almost not noticeable (Fig. 4B).

Description. – Average sized lophioneurid (~1.01 mm, from the front of the head to the apex of the abdomen in the holotype). Forewing membrane with a regular tessellating hexagonal pattern; Sc long (ca. half wing length); R, M, and Cu fused forming a long common stem; apical fusion of MP with CuA which creates an enclosed, large central cell. Forewing large central cell approximately reniform in shape. All major forewing veins marked with stout, evenly spaced setae (including along the costal margin). Hindwing simple with only the R and M present. R+M fused for the first half of hindwing length, then M diverges perpendicularly from the R+M stem; R is bifurcate with the RA and Rs terminal behind the wing apex. Antennae long and eight-segmented with long, unadorned segments. Legs straight and long with distinct setae throughout their lengths. Tarsi ca. ½ to ⅓ as long as tibiae; claws small.

Retiptera brennae **gen. et sp. nov.**

ZooBank : https://zoobank.org/A209191D-F628-442B-9882-E627C85D6F2C

Holotype. – The holotype specimen will be deposited in the Asian Amber Biological Museum: Tainan, Taiwan (currently being developed with an anticipated opening in 2027). Specimen number: A.A.B.M#Thysanoptera.2024001.

Paratype. – The paratype was donated by Patrick Müller, Käshofen, Germany to the last author and is located in his collection (Collection Ulitzka, specimen number MU-Fos-153/1).

Etymology. – Patronym, named to honor the first author's sister, Brenna Cumming. This species is named to thank her for her years of support and love. Just like this species, Brenna is unique and beautiful.

Type locality. – Hukawng Valley, Kachin State, Myanmar.

Horizon and age. – Upper Cretaceous ~98.79 ± 0.62 million years old (Shi et al., 2012).

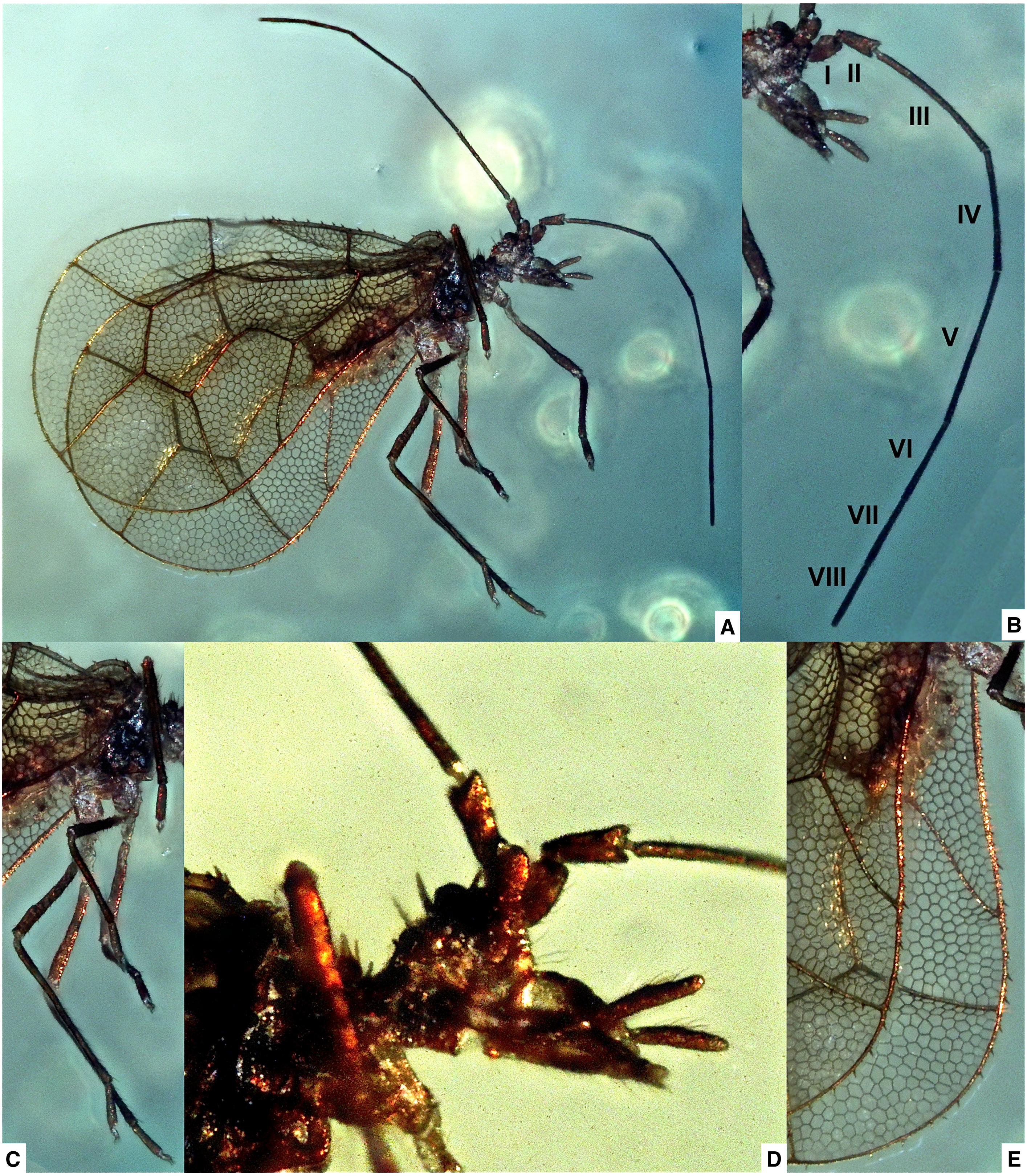

Fig. **4**. *Retiptera brennae* **gen**. et **sp**. **nov**. holotype male specimen. **A**. Lateral habitus. **B**. Details of left antenna. **C**. Details of legs, lateral. **D**. Details of head and antennae bases. **E**. Details of forewing margin.

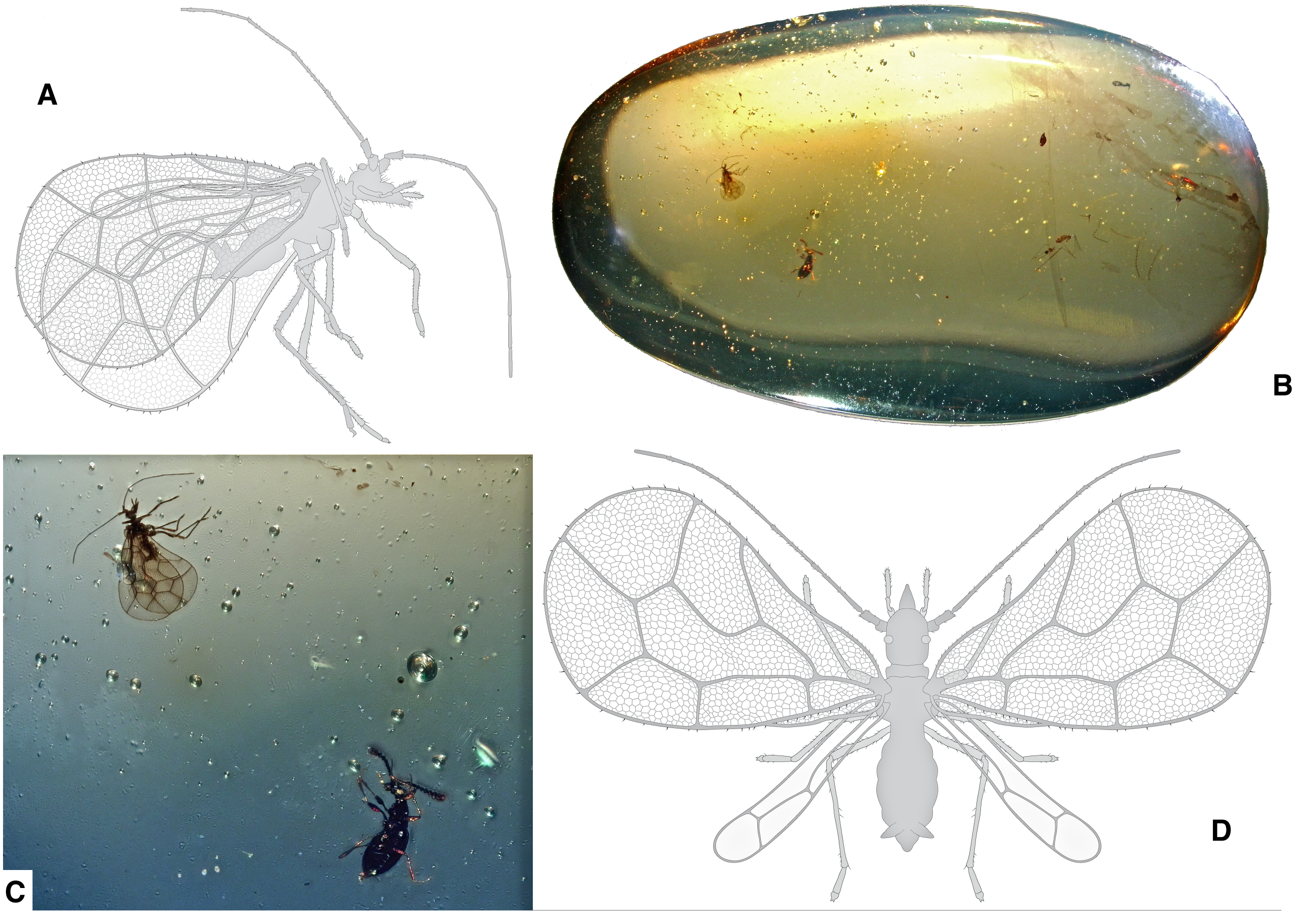

Fig. **5**. *Retiptera brennae* **gen**. et **sp**. **nov**. holotype, male. **A**. Lateral habitus line drawing. **B**. Full amber piece with *Retiptera brennae* **gen**. et **sp**. **nov**. holotype inclusion with syninclusion coleopteran (bottom right) and dipteran fragments (right side). **C**. Details of holotype placement alongside coleopteran syninclusion. **D**. Reconstruction line drawing.

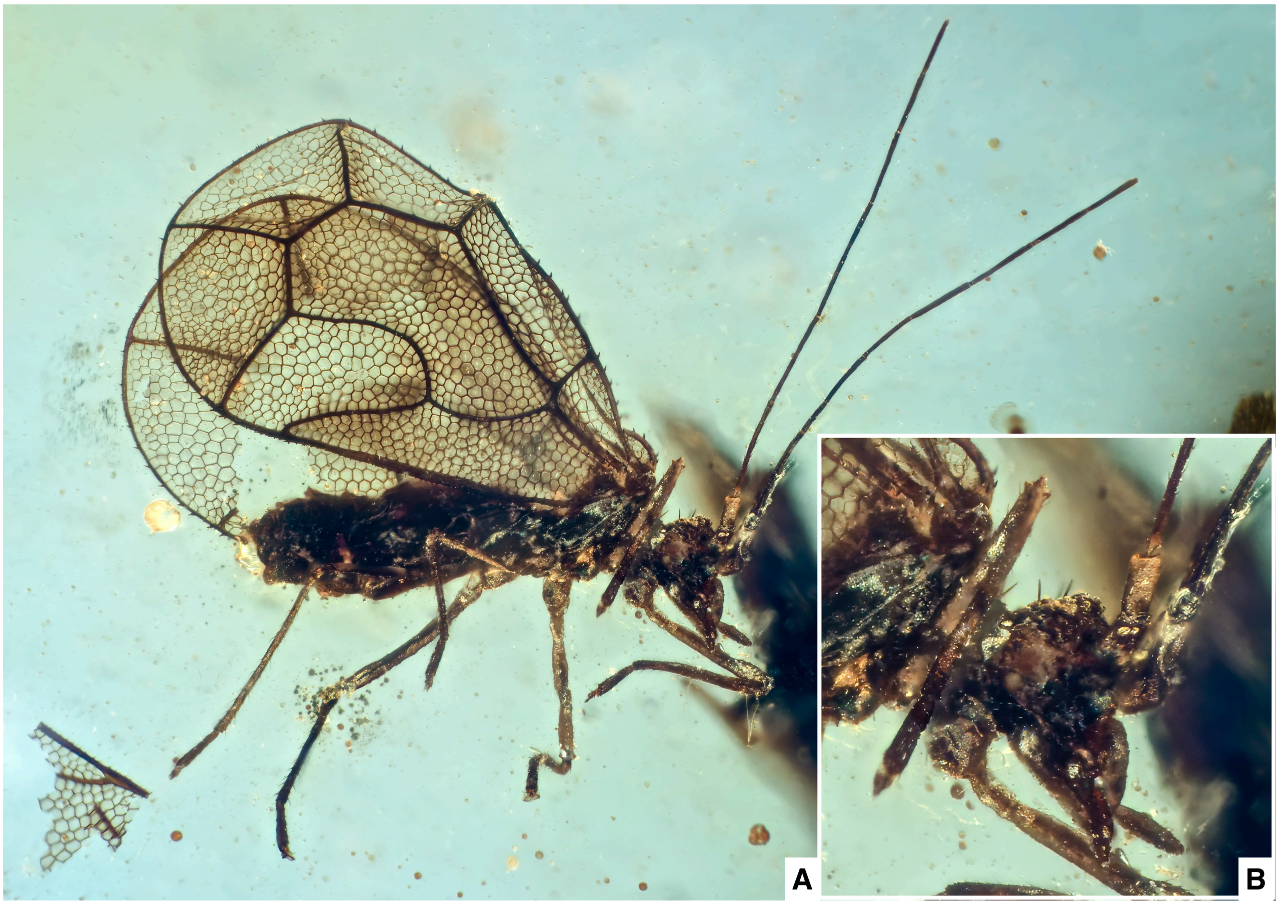

Fig. **6**. *Retiptera brennae* **gen**. et **sp**. **nov**. paratype, female. **A**. Lateral habitus. **B** (inset). Details of head and antennae bases, lateral.

Preservation. – *Holotype*: Specimen preserved in a roughly ovular piece of amber (~14.7 x 25.2 mm; Fig. 5B). Specimen with excellent preservation, within an amber piece with excellent clarity. The amber piece has minimal debris inclusions, none obscuring the holotype, but does have many small bubbles, a few of which are near the holotype. The holotype specimen is excellently preserved and nearly complete, with the only damage being a missing terminal flagellomere on the right antenna. There are several syninclusions, namely a small coleopteran near the holotype (Fig. 5C) and several fragmented dipteran pieces in the opposite end of the amber.

Paratype: Specimen preserved in a thin slice of amber (~13.0 x 11 mm). Specimen with excellent preservation, within an amber piece with excellent clarity. The amber piece has some debris inclusions, however none obscuring the paratype.The paratype specimen is excellently preserved and nearly complete, with a small piece of left forewing broken off, which lies beside the inclusion. Syninclusions: Remnants of an insect leg, plant detritus, and several stellate plant hairs.

Differentiation. – Currently the genus is monotypic. See the generic differentiation above for differentiation from the other two species presently known in the clade; *Burmacypha longicornis* and *Iotacypha zherikhini*.

Description

Head. – Antennae with eight segments (scapus, pedicellus, and six flagellomeres), long, originating near the base of compound eyes. Scapus stout, only slightly longer than wide with several short setae. Pedicellus slightly longer than scapus and cylindrical, longer than wide, also with several sparse setae throughout the surface. There are six flagellomeres which are ca. ½ as wide as the greatest width of the pedicellus. The flagellomeres vary in length as there are three longer followed by three shorter ([in mm] I=0.17, II=0.14, III=0.18, IV=0.11, V=0.09, VI=0.08; Fig. 4B). Each flagellomere is unadorned and simple, at most with only slight pubescence; Fig. 4B). Posterior of the head marked by three stout setae which are angled posteriorly (Fig. 6B). Compound eyes round, large, but not overly protruding; ommatidia large and therefore few. Clypeus stout and oblong, traversing the front of the head. The mouth cone (labrum) is longer than the head and symmetrical; when viewed laterally is arcing to the apex (Fig. 4D). Maxillary palps moderately long and thick, protruding belong the apex of the mouth cone (Fig. 4D). Maxillary palps two-segmented with the second segment ca. twice as long as the first and marked along the dorsal surface with several prominent setae (Fig. 4D). Labial palps shorter, only just slightly projecting beyond the apex of the mouth cone, and appear to be unsegmented.

Thorax. – Pronotum short, slightly wider than base of head, somewhat collar-like and adorned with closely packed stiff, straight setae. Mesonotum broad and prominently raised above the pronotum/head when viewed laterally; heavily adorned by short, stiff setae (Fig. 4D). Metanotum not distinct in the specimens at hand.

Wings. – Forewing large and well-developed, projecting longer than the apex of the abdomen, about 1.57 times longer than wide. General shape is pyriform due to a narrow base widening out to a significantly broad, rounded apex (Fig. 5D). The forewing membranes are sclerotized in regular hexagon tessellation with most cells being hexagonal in shape (most are approximately symmetrical) and the sclerotized veins between the cells are thin and angular, giving the membrane a honeycomb appearance (Fig. 3E). Forewing venation prominent and thick (veins only slightly thinner near the apex, but still prominent). Forewing costal margin appears finely serrate (Fig. 4E), while the other margins are relatively smooth but marked sporadically with stout, spine-like setae. The interior veins of the forewing also have these thick spine-like setae and they appear to be relatively evenly spaced. Costal margin for most of its length is relatively straight to the widest point near the distal ⅓ of the wing length where it then arcs to create a wide, rounded apex (Fig. 3C). The anal margin is also relatively straight for most of its length until the widest point of the forewing. Sc distinct, fused with R+M+Cu at the base and runs with them for ca. ⅓ of the Sc length before the Cu splits from them, Sc then runs with the R+M for ca. ⅓ of its length, running parallel with the costal margin before it splits from R+M and runs to the costal margin slightly proximal to the wing mid length. As the Sc runs parallel with the costal margin and is spaced away from the margin, this creates a cell which is somewhat trapezoidal. Approximately ⅓ of the way through the wing length the Cu splits from the Sc+R+M vein and after a very short Cu, bifurcates at a 90 degree angle into the CuA (which runs parallel with the anal margin) and the CuP which is perpendicular to the anal margin. The Sc+R+M following the Cu split runs parallel with the costal margin until the Sc splits from it, leaving only the R+M which immediately arcs away from the costal margin for ca. the central ¼ of the wing length before the RA splits and runs slightly towards the wing base where it terminates near the wing mid length. Following the RA split, the Rs+M angles towards the anal/apical margin and near the distal ⅓ of the wing length near the center of the wing, the Rs1 splits and runs directly to the wing margin, terminating near the wing apex. The M following the split from the Rs+M is angled towards the anal margin and slightly back towards the base of the wing and runs for ca. ¼ of the wing width before bifurcating. The M bifurcates into the MA and MP which angle evenly away from each other (at an angle of ca. 120 degrees) with the MA terminating on the wing margin near the apical/anal margin. The MP is angled strongly back towards the wing base and fuses with the CuA and they run as a MP+CuA vein perpendicularly to the anal margin, where they terminate slightly more than halfway through the wing length. The 1A runs slightly converging with the anal margin for ca. ⅖ of the wing length before terminating on the anal margin. Approximately halfway through the 1A length the perpendicularly running CuP meets the 1A and fuses with it (Fig. 3C). Hindwing is highly reduced and narrow, membranous, lacking sclerotization, with thinner veins than in the forewing. The hindwing is significantly narrower and shorter than the forewing (ca. ⅔ its length and about 1/7 of its width) and has a length:width ratio of 7.6 times longer than wide. The only veins present are a long fused R+M common stem which runs somewhat near the anal margin for ca. half of the wing length. Near the middle of the wing, a simple M splits at a right angle from R, and terminates near the middle of the hindwing anal margin. R runs simply for ca. ¼ of the wing length and then bifurcates on the posterior ¼ of the wing into the RA and Rs which angle strongly away from each other and terminate on the costal and anal margins respectively, near but not onto the wing apex.

Abdomen. – Abdomen short in the male holotype (~0.30 mm long), only extending ca. ⅓ of the way along the wings. In the specimen at hand the segmentation is somewhat indistinct, except for possibly a tapered terminal segment (Fig. 4A). The female paratype has a longer abdomen (~0.45 mm long) with more distinct segmentation, and a structure interpretable as a short ovipositor (Fig. 6A).

Legs. – Legs long, and moderately thick; femora and tibiae cylindrical, both with thin but numerous setae (Fig. 4C). Tarsi appear to be composed of a single long segment (in the pro- and meso- legs the tarsi appear ca. ⅖ as long as the tibiae they are on, but on the long metatibiae the tarsi is only ca. ⅓ the length); simple pulvilla present and small claws.

Dimensions

- Measurements of the male holotype specimen (Fig. 4A) which is in a flat profile view within the amber.

Body length (from front of head to apex of abdomen) 1.01 mm,
Head depth (top of head to tip of mouthparts) 0.17 mm,
Head length 0.09 mm,
Thorax length 0.13 mm,
Abdomen length 0.30 mm,
Forewing length 0.88 mm,
Forewing maximum width 0.56 mm,
Hindwing length 0.61 mm,
Hindwing maximum width 0.08 mm,
Total antenna length ~ 0.86 mm,
Scapus 0.04 mm,
Pedicellus 0.05 mm,
Flagellomere I 0.17 mm,
Flagellomere II 0.14 mm,

Key to presently described Iotacyphinae species

1. Antennae seven segmented; hindwing well-developed, only slightly shorter/narrower than the forewing **2**
— Antennae eight segmented; hindwing reduced, long and thin, significantly smaller than the forewing .... ***Retiptera brennae*** **gen**. et **sp**. **nov**.

2. Forewing with a fused Rs1+MA vein emerging from the central closed cell, splitting into the Rs1 and MA which run diverging to the wing margin .... ***Iotacypha zherikhini*** Shcherbakov et al., 2024
— Forewing with Rs1, Rs2, and MA emerging independently from the closed cell .... ***Burmacypha longicornis*** Zherikhin, 2000

Flagellomere III 0.18 mm,
Flagellomere IV 0.11 mm,
Flagellomere V 0.09 mm,
Flagellomere VI 0.08 mm,
Profemora 0.16 mm,
Mesofemora 0.16 mm,
Metafemora 0.18 mm,
Protibia 0.12 mm,
Mesotibia 0.20 mm,
Metatibia 0.27 mm,
Protarsi 0.07 mm,
Mesotarsi 0.07 mm,
Metatarsi 0.09 mm.

- Measurements of the female paratype specimen (Fig. 6A) which is in a flat profile view within the amber.

Body length (from front of head to apex of abdomen) 0.83 mm,
Head depth (top of head to tip of mouthparts) 0.23 mm,
Head length 0.09 mm,
Abdomen length 0.45 mm,
Forewing length 0.85 mm,
Forewing maximum width 0.54 mm,
Total antenna length ~ 0.92 mm.

Discussion

With additional species of ancient Lophioneurida being described, the greater picture of the overall relationships are gaining clarity. Due to the age of many of these Lophioneurida clades, this opens up the potential for larger time calibrated phylogenetic studies and highlights the need for further taxonomic adjustments.

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Résumé

Cumming R. T., Engel M. S., Lian Z. & Ulitzka M. R., 2024. – Petite, complexe et belle ; une nouvelle espèce de lophioneuride du Crétacé (Insecta: Thripida: †Lophioneurida). *Faunitaxys*, 12(58): 1 – 10.

Suite à une publication récente décrivant une nouvelle espèce de lophioneuride au sein d'une nouvelle sous-famille (Iotacyphinae), plusieurs collections ont été examinées à la recherche de matériel supplémentaire. Ainsi, plusieurs spécimens d'Iotacyphinae ont été localisés. Certains représentent une espèce récemment décrite, *Iotacypha zherikhini* Shcherbakov et al., 2024, tandis que d'autres représentent une espèce unique non décrite. Cette nouvelle espèce présente une nervation des ailes antérieures significativement distincte. Elle est donc nommée au sein d'un nouveau genre : *Retiptera brennae* **gen. et sp. nov**. Cela porte donc le nombre total d'espèces d'Iotacyphinae à trois, toutes connues exclusivement de l'ambre birman du Crétacé (~ 98,79 ± 0,62 millions d'années). Ce nouveau genre est similaire aux autres espèces d'Iotacyphinae, *Burmacypha longicornis* Zherikhin, 2000 et *Iotacypha zherikhini* Shcherbakov et al., 2024, les trois genres ayant des cellules sclérotisées des ailes antérieures et une grande cellule centrale des ailes antérieures formée par la fusion de MP avec CuA. Pour permettre une différenciation facile de ces trois espèces, une clé des espèces d'Iotacyphinae actuellement décrites est incluse.

Mots-clés. – Insecta, Thripida, Lophioneurida, *Retiptera*, *Burmacypha*, *Iotacypha*, thrips, taxonomie, description, nouveau genre, nouvelle espèce, Burmite, Burma, Crétacé, Myanmar, éteinte, ambre.

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Petite, complexe et belle ; une nouvelle espèce de lophioneuride du Crétacé (Insecta: Thripida: †Lophioneurida).

Royce T. Cumming, Michael S. Engel, Zhendong Lian & Manfred R. Ulitzka . . . . 1 – 10

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Small, intricate, and beautiful; a new species of lophioneurid from the Cretaceous (Insecta: Thripida: †Lophioneurida).

Royce T. Cumming, Michael S. Engel, Zhendong Lian & Manfred R. Ulitzka . . . . 1 – 10

Illustration de la couverture :

Retiptera brennae **gen**. et **sp**. **nov**., male, holotype.

Crédits:

Royce T. Cumming (USA) : Fig. 2, 3A-C, 5A, 5D.
Zhendong Lian (Taiwan) : Fig. 3E, 4, 5B-C & couverture.
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